

(Unclassified Paper)*

NAVAL WAR COLLEGE
Newport, RI


THEATER MISSILE DEFENSE: DOES THE QUADRENNIAL DEFENSE REVIEW GO
FAR ENOUGH IN SUPPORT OF THE OPERATIONAL COMMANDER?

by

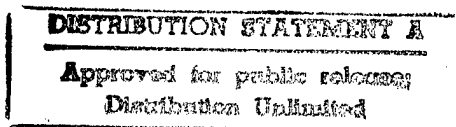
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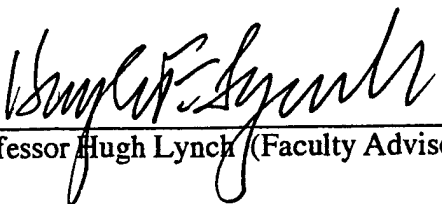
A paper submitted to the faculty of the Naval War College in partial satisfaction of the requirements of the Department of Joint Military Operations.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.

Signature: 

13 February 1998




Professor Hugh Lynch (Faculty Advisor)

DTIC QUALITY INSPECTED 1

19980709 005

UNCLASSIFIED

REPORT DOCUMENTATION PAGE

1. Report Security Classification: UNCLASSIFIED															
2. Security Classification Authority:															
3. Declassification/Downgrading Schedule:															
4. Distribution/Availability of Report:		DISTRIBUTION STATEMENT A: APPROVED FOR PUBLIC RELEASE; DISTRIBUTION IS UNLIMITED													
5. Name of Performing Organization:		JOINT MILITARY OPERATIONS DEPARTMENT													
6. Office Symbol: C		7. Address: NAVAL WAR COLLEGE 686 CUSHING ROAD NEWPORT, RI 02841-1207													
8. THEATER MISSILE DEFENSE: DOES THE QUADRENNIAL DEFENSE REVIEW GO FAR ENOUGH IN SUPPORT OF THE OPERATIONAL COMMANDER? (U)															
9. Personal Authors: LCDR Charles E. Baker, III, USN															
10. Type of Report: FINAL		11. Date of Report: 13 FEBRUARY 1998													
12. Page Count: 21															
13. Supplementary Notation: A paper submitted to the Faculty of the NWC in partial satisfaction of the requirements of the JMO Department. The contents of this paper reflect my own personal views and are not necessarily endorsed by the NWC or the Department of the Navy.															
14. Ten key words that relate to your paper:															
<table border="0"> <tr> <td>Quadrennial Defense Review</td> <td>Theater Missile Defense</td> <td>NBC Proliferation</td> </tr> <tr> <td>Operational Commander</td> <td>Weapons of Mass Destruction</td> <td>Ballistic Missiles</td> </tr> <tr> <td>Cruise Missiles</td> <td>Operational Protection</td> <td>Sequential Development</td> </tr> <tr> <td>Interoperability</td> <td></td> <td></td> </tr> </table>				Quadrennial Defense Review	Theater Missile Defense	NBC Proliferation	Operational Commander	Weapons of Mass Destruction	Ballistic Missiles	Cruise Missiles	Operational Protection	Sequential Development	Interoperability		
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15. Abstract:															
<p>In May of 1997, the Secretary of Defense released the results of the Quadrennial Defense Review (QDR) establishing the Department of Defense's force structure and modernization program requirements designed to meet the challenges of the 21st century while ensuring current readiness. Included in this report were the continuation of numerous programs designed to provide a theater missile defense (TMD) system.</p> <p>The Gulf War demonstrated the difficulties of preventing and defending against the use of ballistic missiles launched at U.S. and allied deployed forces. Further, the continued proliferation of nuclear, biological and chemical weapons and the associated delivery technologies are an increasing threat to deployed operations. These threats could effectively deter U.S. foreign policy and out of area operations in regions considered vital to national security.</p> <p>This paper will examine the approach of the QDR with respect to TMD programs, and ask the question, does the QDR go far enough in support of the Operational Commander? Specific recommendations are offered to demonstrate how the QDR could have more fully committed to TMD, countering the threat of WMD in regional conflicts.</p>															
16. Distribution/ Availability of Abstract:	Unclassified X	Same As Report	DTIC Users												
17. Abstract Security Classification: UNCLASSIFIED															
18. Name of Responsible Individual: CHAIRMAN, JOINT MILITARY OPERATIONS DEPARTMENT															
19. Telephone: 841-6461		20. Office Symbol: C													

UNCLASSIFIED

Introduction

In May of 1997, the Secretary of Defense released the results of the Quadrennial Defense Review (QDR) establishing the Department of Defense's (DoD) force structure and modernization program requirements to meet the challenges of the 21st century while ensuring current readiness. Included in this report was the continuation of numerous programs designed to provide a theater missile defense (TMD)^a system. As a result of the Gulf War, an increasing realization of the vulnerabilities of U.S. and allied forces to a ballistic missile attack, especially with the potential employment of a weapon of mass destruction (WMD), has spurred the defense acquisition community to research and develop a viable defensive system. While the wide array of programs and complex nature of deployment to achieve an effective system is continually being debated, given the modern proliferation of theater missile technologies and the relative ease of acquiring chemical and biological stockpiles, the threat from a variety of potential adversaries is becoming increasingly feasible. Thus, without an effective TMD system, the Theater Commander may face serious difficulties protecting the forces and resources employed, and endangering the national strategic ability to project force in support of vital national interests. To this end, does the QDR go far enough in support of the Operational Commander?

The Gulf War Realization

The Gulf War demonstrated the difficulty of deterring third world tyrants such as Saddam Hussein and the difficulties associated with eliminating TBM [Theater Ballistic Missile] launch capabilities through offensive actions. Thus, active defense is a critical element of the solution to these rapidly proliferating weapons, and must be improved.¹

One of the real threats of the Gulf War was the fear of chemical weapons use by Iraq as was demonstrated in the Iran-Iraq war. Although the coalition threats of retaliation should Iraq use chemical weapons seemed to have been successful, the Gulf War did reveal a vulnerability to short and intermediate range ballistic missile attacks. Iraq successfully launched 89 Scud missiles at coalition forces and Israel throughout the Gulf War.² The most devastating attack

^a For the purposes of this paper, Theater Missile Defense (TMD) will refer to the defense against ballistic missiles, cruise missiles, or any surface-to-air missiles whose target is in a theater of operations. (Joint Pub 1-02)

against U.S. and coalition forces came in Dhahran, Saudi Arabia, where 28 U.S. servicemen were killed by a Scud missile. Despite complete air supremacy the coalition forces were unable to destroy any of Iraq's mobile Scud missile launchers.³

The potential threat of ballistic missiles employing nuclear, biological, or chemical (NBC) warheads was among the greatest realizations of the Gulf war. The need for a TMD system to protect forward deployed American forces remains critical. In fact, then-Secretary of Defense Aspin, in 1993 stated "Hussein and his Scud ballistic missiles showed us that we need ballistic missile defense for our forces in the field. That threat is here and now."⁴ Further, that threat has continued to grow with the wide scale distribution of ballistic and cruise missile technologies and the associated proliferation of NBC weapons.

The Proliferation of WMD and Theater Missile Technologies

Since the realization of the potential spread of WMD the proliferation of the associated technology has also increased. In modern times, and more specifically since the end of the Cold War, this concern has grown to encompass NBC weapons and the associated delivery systems in the form of ballistic and cruise missile technologies. As the threat has grown, efforts at counterproliferation are starting to receive increased importance. In fact, A National Security Strategy (NSS) for a New Century noted; "[w]e must continue to reduce the threat posed by existing arsenals of such weaponry [WMD] as well as work to stop the proliferation of advanced technologies that place these destructive capabilities in the hands of parties hostile to U.S. and global security issues."⁵

Interestingly, this increased visibility given to counterproliferation is filtering down. The Geographic Commanders in Chief (CinCs) have been instructed to adopt counterproliferation efforts in their respective areas of responsibilities and the Deputy Secretary of Defense will chair a Counterproliferation Council.⁶ These efforts should greatly assist in increasing the effectiveness of counterproliferation efforts but a certain level of proliferation already exists and will continue to grow as economically strapped countries seek windfalls from the sales of military hardware and technology.

Nuclear weapons and other weapons of mass destruction will be a growing concern. The states of the former Soviet Union retain a large, relatively unsecured nuclear arsenal and a number of highly qualified but underpaid, underemployed, scientific minds. So a degree of proliferation will take place. The threat of localized nuclear warfare is a growing possibility that could effect us all.⁷

As this statement suggests, the marketing of technology and scientific expertise could enable third world countries to purchase the requisite resources to field theater missiles with WMD capabilities. In fact, "[p]resently, twenty-four countries have or are pursuing WMD. By the turn of the century, twenty or more developing countries could acquire ballistic missiles, at least nine could have nuclear weapons, thirty or more could have chemical weapons and ten could maintain biological weapons."⁸ What continues to be troubling about these developments are the particular countries seeking these technologies have a history of opposing the United States strategic objectives and represent potential adversaries.

Specifically, countries traditionally hostile towards the United States such as North Korea, Iran, Libya, Syria, and Cuba are actively seeking nuclear technologies. It has been reported that as early as the mid-1980's these countries formed a 'radical alliance' to achieve this end.⁹ Although nuclear technology is difficult and costly to obtain and develop, the potential effectiveness of such weapons as a deterrent or threat is driving these countries to establish nuclear capabilities. Incredible as it might sound, "Qadhafi [Libyan leader] is convinced that had Saddam Hussein had nuclear weapons, the U.S.-led coalition would not have dared to attack Iraq. Thus, for the radical alliance, since only indigenous nuclear capabilities can deter the U.S., they constitute the only instrument to ensure its survival."¹⁰ Perhaps equally important for the Operational Commander, these same countries, and many others, have already acquired or are seeking to acquire biological and chemical weapons.

Biological and chemical weapons offer a country an alternative to nuclear weapons in that they "... both are relatively easy and cheap to acquire, and because the requisite support facilities lack unique signatures, they are far less vulnerable to attack."¹¹ Given the already established willingness to use chemical weapons by some of these countries, such as both Iran and Iraq in their regional seven year war and also Libya's use against Chad in 1983, the threat

to regional stability and American forward deployed forces is very real. Ultimately, the effectiveness of a WMD program hinges on these countries' further attempts to refine and develop ballistic missile technologies.

Perhaps as much of a concern as WMD is the proliferation of ballistic missile technologies, itself. Currently, numerous countries possess ballistic missiles predominately in the area of short range missiles with less than accurate guidance systems. However, given the trend of sales and development of these technologies, increases in range and accuracy can be expected. With these upgrades, the number of ballistic missiles continues to grow. It is estimated that more than 13,450 ballistic missiles are in service for 34 countries, and that 30 new types of ballistic missiles are in development.¹² Similarly, cruise missile technologies are beginning to be pursued to augment the ballistic missile arsenals of these countries.

Cruise missiles offer another launch vehicle for biological and chemical weapons. They traditionally have an increased accuracy and a more flexible launch capability. Because of their smaller size, relative to ballistic missiles, a mobile launcher would be even more difficult to locate and easier to conceal while possessing the added potential for deployment from land, sea and air.¹³ Successful efforts to acquire cruise missile technologies will similarly increase the WMD launch capabilities and target options available in a theater engagement.

As proliferation continues to aid in the development of multiple launch options, more accurate targeting systems, and increases in launch distances there will continue to be a growing threat to regional stability in these areas. "Perhaps the most troubling implication from a U.S. political-military perspective is that, of those states actively pursuing NBC and missile programs, a significant number pose direct threats to stability in vital regions where the United States has long standing security commitments and the forward presence of its forces."¹⁴ Recognizing these threats, the NSS correctly establishes the need to develop and implement missile defense technologies. Acting on this requirement, the QDR attempts to translate this need into solutions by specifically identifying TMD programs.

The QDR and TMD Systems

On 19 May 1997, the Secretary of Defense formally released the results of the QDR designed "...to develop a balanced defense program that met the requirement of strategy, both near and long term, within projected resources."¹⁵ The QDR clearly recognizes the need for a TMD system and outlines specific programs to meet this threat. It suggests the continuation of numerous programs designed to offer a multi-layer defense including both land and sea based employment. The specific programs listed for continuation are the Theater High Altitude Area Defense (THAAD), Medium-Extended-Air-Defense-System (MEADS), Patriot Advanced Capability-3 (PAC-3), Navy theater wide defense (previously Navy upper tier), Navy Area defense (previously Navy lower tier), and the Air Force's Airborne Laser (ABL) program.

The QDR reestablishes the need for these systems and effectively plans for a flexible response in a variety of theater employment. The THAAD, MEADS and PAC-3 systems may be deployed to inland sites to effectively provide defense while the Navy theater-wide and area defense systems offer the forward deployed capability to protect the littoral theater area. The ABL program would offer protection to both of these areas as long as air superiority is established to allow for its unencumbered operation. Combined, these systems can effectively offer the Theater Commander the protection of forces and a deterrence against the employment of theater missiles equipped with WMD. Further, to counter the wide range of potential theater missile launches (from short range to extended range) these systems offer a two tier approach designed to ensure the establishment of an umbrella type defense.

The THAAD and Navy theater-wide defense system are designed to be effective against higher speed and longer range ballistic missiles which travel at correspondingly higher altitudes. These systems will offer a larger protection area as a result of their fast interception speed but lack the maneuverability to counter lower altitude, short range ballistic missiles. These upper tier defense systems offer the first line of defense in a multi-layered approach to TMD. "Because short-range ballistic missiles fly largely or completely below the minimum altitudes of these systems, they need to be backed up by a lower tier defense."¹⁶

The lower tier design incorporates programs such as PAC-3, Navy area defense and the MEADS program to establish a defense against short range ballistic missiles. Estimates by the Defense Department suggest that only 3% of all theater ballistic missiles possessed by potential hostile governments have a range over 500 km and this number is expected to grow to 20% in the future.¹⁷ This highlights the increased importance of an effective lower tier defense system while increasing the scope and advancements in technology required to develop an upper tier system. There are currently deployable lower tier systems such as the Patriot system and the Marine Corps Hawk missile. However, these TMD systems offer only very limited range (Hawk-15 miles, Patriot-37 miles) and despite arguable success for the Patriot in the Gulf War, the current and future threat of theater missiles will require a more comprehensive and far reaching defense network. Below, table I lists the various programs delineated by the QDR and presents a brief overview of their expected capabilities.

Table I
QUADRENNIAL DEFENSE REVIEW
THEATER MISSILE DEFENSE PROGRAMS

Program ^a	System Features	System Description	Estimated Deployment Date
THAAD	Air Transportable	Upper Tier, Long Range Intercept	2006
Navy Theater-Wide	Aegis Cruiser System Integration	Upper Tier, Long Range Intercept,	No Fielding date available
Airborne Laser ^b	Aircraft (747-400)	Both Upper and Lower Tier (Boost Phase Intercept)	Concept Validation by 2002
MEADS	Air Transportable	Lower Tier Plus Intermediate Range Protection Coverage	2005
Navy Area	Aegis Cruiser System Integration	Lower Tier, Forward Deployed Protection	2002
PAC-3	Air Transportable	Lower Tier, Engage Short and Intermediate Range TBM and Cruise Missiles	1999

Notes: (a) All information provided by Ballistic Missile Defense Organization, except information on the Airborne Laser program. (b) Airborne Laser data extracted from: Paul Proctor, "Boost Phase Intercept, Key to ABL Deterrent," *Aviation Week and Space Technology*, 3 MARCH, 1997, 67.

The QDR keeps these TMD programs alive but has not firmly established a commitment to accept the high risk of development with respect to funding constraints. For example, the MEADS program, the planned replacement for the Hawk missile, is a multi-national program (German, Italian and American), but the QDR has not committed to counter potential Congressional funding restraints beyond fiscal year 1999. France, an original investor in MEADS, withdrew from the program in the spring of 1995 due to their own funding constraints, further complicating the funding issue with the program. Similarly, The QDR has delayed the THAAD program from a 2004 deployment date to a 2006 deployment date. This was a result of test failures and is described as essential to stabilize the program, lower risk and explore potential common components with the Navy theater-wide program.¹⁸

The QDR has tackled a tough dilemma; how to maintain the NSS for today and tomorrow on a shrinking budget. It estimates continuing funding of 250 billion or 3.2 percent of GNP to meet these requirements.¹⁹ Despite the difficulties in managing this funding dilemma, the QDR has not sufficiently addressed the TMD issue. The seriousness of the current and future threat to deployed operations could have tremendous political, strategic and operational implications on the United States' ability to project force in vital regions around the world.

National Strategic Restrictions

First, we must be prepared and willing to use all appropriate instruments of national power to influence the actions of other states and non-state actors. Second, we must have the demonstrated will and capabilities to continue to exert global leadership and remain the preferred security partner for the community of states that share our interests.²⁰

The significance of an effective TMD system with our stated national strategic goals is paramount. Our ability to project force in the pursuit of vital national interests is directly related to our ability to exploit our technological and conventional superiority. Any inability to protect our forces and allies from a theater missile attack with the potential employment of a WMD will have a significant impact on our ability to maintain international support and may influence force protection capabilities. Further, an effective strike with a WMD against American and

allied forces could drive casualties to unacceptable levels. These threats could effectively deter implementation of U.S. foreign policy in regions considered vital to national security.

In modern times, it has become increasingly important to limit casualties and quickly obtain a decisive victory. This method of war fighting is driving our military to exploit technological advantages in all facets of the battlefield. The potential use of a WMD will pose significant problems and potentially serve as an effective deterrent against American intervention. For precisely this reason, 'rogue' countries will continue to exploit theater missile technologies and NBC capabilities to ensure their regional hegemony while attempting to protect against an American deployment of force. This threat could potentially weaken the resolve of other countries hampering coalition building and possibly result in a unilateral deployment of American forces.

Historically, the United States has been the leader in resisting aggression in various regions of the world. As the Gulf War demonstrated, the United States acted as the catalyst for organizing a multinational coalition against Iraqi expansion. As a result of American resolve, an effective coalition of over forty countries successfully expelled Iraq from Kuwait. This ability to lead a coalition of various countries is critical to our ability to maintain public and international support when force becomes necessary to achieve political ends. "Any NBC use would almost certainly fundamentally alter the political nature of the conflict as well. Even the threat of use could lead to pressures (such as driving a wedge in the coalition) as well as reassessments of coalition objectives and resolve."²¹

The potential limitations of a theater missile equipped with a WMD, when considering the political options to protect national interests in dealing with a crisis, could effectively relegate all attempts to diplomatic means. "A credible threat to launch missiles armed with weapons of mass destruction [WMD] against vulnerable targets could paralyze out of area operations."²² This could limit the leverage that the threat of force has traditionally exerted to achieve acceptable results through diplomatic channels.

Operational Restrictions

Operationally, the threat of WMD is even more critical. Once the political decision has been made to deploy U.S. troops to a theater in support of national interests, the potential threats offered by theater missiles, especially equipped with WMD, increases the difficulty associated with meeting the military requirements to achieve the political objectives. The geographic CinC or Joint Task Force Commander, as the operational commander, will have to limit potential theater missile targets to ensure the protection of forces and resources. Joint Pub 3-10.5, Doctrine for Joint Theater Missile Defense, lists these potential targets as: Attacks on deployed United States and multinational forces, interdiction of lines of communication, attacks on logistic facilities (ports, air bases, marshaling areas), counter theater missile defense activity, and countervalue missile attacks on populations centers.²³

The use of WMD on deployed U.S. and multinational forces has the ability to seriously disrupt defensive and offensive operations. A successful attack would have the effect of limiting the freedom of action required to counter enemy movement and achieve surprise in offensive operations. This ability would effectively limit military options and disrupt the sequencing and synchronization efforts required to defeat an enemy while enhancing the enemy's ability to exploit their own offensive operations. Further, the attrition of personnel could effectively raise the number of casualties to unacceptable levels both politically and militarily.

The threat to lines of communication offers a more indirect threat to the operational forces by threatening the longevity of an operation. Lines of communication establish the re-supply routes of deployed operations whether on the sea for littoral operations or over land. Any disruption to these lines of communication could have a ripple effect as the interruption to re-supply may not be immediately felt but would certainly have an adverse effect on sustainment of forces in the field. This threat to lines of communication could inhibit future plans and lead to the cancellation of major operations for fear of exceeding the critical supply components required.

Similarly, a successful attack against logistic facilities such as ports, air bases or marshaling centers would adversely effect sustainment. The effects from the destruction of these logistics centers would have a more immediate impact on operations. The ability to re-supply is critical to everyday readiness and force structure. In addition, any disruption of these distribution centers would almost certainly have a dual impact. For example, if an air base was destroyed, not only would this affect the air lift effort, but it could also directly affect defensive and offensive air operations. In such circumstances, the disruption of logistics support would logically cause the premature arrival of the culminating point whether defending against an enemy offensive or conducting offensive maneuvers.

The threat of countering TMD activity is predominately associated with targeting the hub of missile defensive units such as Patriot batteries or Aegis cruisers themselves. Other potential targets include space-based satellites, early warning systems, launch radars and the command and control apparatus which alert and guide these defensive actions. Again, as in other potential targets, since the defense apparatus is typically located near high value sites, there could be a dual result in targeting these hubs of missile defense activity. Ultimately, successful launches against these missile defense activities could result in the escalation of missile attacks against other targets as the TMD structure would be weakened.

The threat of countervalue missile attacks on population centers arguably may have more of a strategic implication than operationally, but nevertheless, the causes can be just as devastating as other potential targets. This threat offers the enemy a potentially asymmetrically decisive weapon to counter a technologically superior enemy. As demonstrated during the Gulf War, Iraqi Scud launches against Israeli cities were designed to have a strategic impact by drawing Israel into the war thereby threatening the unity of the coalition. These efforts failed to achieve the desired Iraqi outcome, but only as a result of exhaustive diplomatic efforts. Operationally, these threats against population centers will continue to restrict freedom of action by increasing the number of personnel and resources required to provide protection. This will further distract from the ability to mass troops in support of decisive military operations.

Together, all of these potential targets and the need to defend them from theater missiles, especially from the potential threat of WMD, present a drain on personnel and resources. Even the threat of theater missiles will require an increased response of personnel and resources to prevent successful employment. As was demonstrated during the Gulf War, the Iraqi use of Scud missiles had a negligible impact on tactical operations, but operationally, caused a major allocation of forces (predominately air assets) to seek and destroy Scud launch sites.²⁴ In the Gulf War, the coalition forces achieved complete air superiority. In a future conflict where air superiority is less certain or terrain conditions neutralize its effectiveness, the threat of WMD could require an even larger commitment of forces and resources to locate and destroy launch sites.

A credible threat from theater missiles employing WMD will have a crippling effect on military operations. Surely an enemy possessing theater missiles with NBC capabilities, up against a superior technological and trained force could resort to launching missiles to counter apparent weaknesses. Operationally, the successful employment would exploit U.S. vulnerabilities by disrupting or altering the ability to establish logistical centers. Also, the ability to threaten the operational stability of U.S. forces employed in theater could effectively act as a force divider by requiring an excessive commitment of personnel and resources to maintain force protection. One way to guarantee protection against theater missiles tipped with WMD is to ensure an effective and viable TMD system is employed to further counter and deter the apparent benefit of use.

Specific Recommendations

The operational and strategic need for a TMD system is paramount to ensure deterrence and protection against a 'rogue' nation's employment of WMD against U.S. and allied forces. The risk for such employment is growing day by day despite counterproliferation efforts. While the QDR specifically delineates force numbers for each of the respective services and details the quantity of procurement efforts for surface combatant ships, tactical fighters (F/A-18 E/F, F-22) and attack submarines, it fails to offer a clear vision for TMD systems. In fact, on

the subject of missile defense, the QDR simply establishes funding, not a commitment to a concept to achieve the most viable and effective systems. In order to fully support the Operational Commander the QDR needed to establish:

- A priority in the development of the major missile defense programs (TMD, NMD).
- A commitment to long term funding issues.
- Interoperability between service-specific missile defense systems.

The QDR correctly supports the programs in missile defense to meet the objectives of the NSS and Joint Vision 2010. However, with the inclusion of the three recommendations suggested above, the QDR would more directly support the need for TMD. By establishing a development priority, long term funding, and ensuring interoperability, it would have demonstrated and more clearly established the DoD's commitment to countering the existing and future threat to theater operations from missile launched WMD.

The QDR seems to suggest that concurrent development is essential to meet the future threats. But as stated in the National Security Strategy for a New Century "... the intelligence community does not believe it likely that any hostile state will develop an intercontinental-range missile capability that could threaten our nation in the foreseeable future. . ." ²⁵ In contrast, the threat from theater ballistic missiles currently exists and as the QDR acknowledges, the threat from cruise missiles is expected after the year 2000. ²⁶ Further, the questions over the compliance of a NMD program with the Anti-ballistic missile (ABM) treaty is still being debated. The potential advantages of sequential development- -TMD followed by NMD- -could offer an answer to the funding problems while giving diplomatic efforts time to work out the ABM compliance issues.

The need for the QDR to establish priorities in respect to the NMD and the TMD programs is paramount given the budgetary constraints planned for in the future. By prioritizing development of the missile defense programs, the potential exists to lower the risks associated with the research and development of follow on technologies. By sequentially developing these systems, technological advances in TMD, as they develop, could offer

enhancements to the NMD programs. Further, this crossover of technology could result in a dual purpose mission for programs such as THAAD or Navy Theater Wide to serve in a NMD capacity for coastal or high value target protection. These potential advantages however, rely heavily on a commitment to fund missile defense programs despite the expected failures and setbacks associated with the development of high technology, state of the art systems.

The QDR report bows quietly to the budgetary limits it envisions, taking as an article of faith the public will support only that designated level of expenditure. But on occasion the public has proved persuadable when the President and Congress presented the case compellingly along with the exigencies of the situation.²⁷

As this statement indicates, when the nation is energized in support of programs designed to ensure American dominance, they have responded. The risk of a WMD against deployed U.S. forces currently exists and is forecasted to increase. The DoD and Congress need to commit to funding these programs in the long term to ensure adequate testing and development. Despite efforts to include allies in the development and funding of these programs, "Europe does not have a coherent strategy and funding is low. Japan has been hesitating because of the cost, and fear of offending China." ²⁸

The QDR fails to stress the severity of the threat and commit to ensuring funding availability to offset the enormous price tag associated with research, development and testing. The flight testing phase alone will require a substantial investment. "For example, a single NMD flight test to evaluate seekers runs about \$50 million, according to [Ballistic Missile Defense Organization] BMDO officials." ²⁹ While simulation is expected to counter some of the flight test costs, extensive flight testing will be required to ensure effectiveness.

To this end, the QDR did not establish a commitment to long term funding issues with TMD. It did however, report an increase in funding to the NMD program and suggested the potential of even more funding availability with savings from strategic nuclear force reduction with Russian ratification of Start II.³⁰ By prioritizing the TMD acquisition programs and adopting a sequential approach (TMD followed by NMD development), increased savings could be realized as a result of the validation of common system components. At a minimum,

the QDR should not have specifically designated increased savings from potential reductions in nuclear forces directly to NMD. By retaining flexibility, these funds could be diverted to meet potential shortfalls in other specific programs, including efforts to ensure the interoperability of TMD systems.

The need for interoperability in the implementation of an effective TMD system is paramount to establishing flexibility and overall battlefield situational awareness. In order to guarantee quick response to changing TMD requirements, the Operational Commander must have the capability to alter the defensive configuration. Interoperability is the cornerstone to flexibility. The QDR needs to establish the importance of interoperability to guarantee a usable command and control system throughout the service-specific TMD programs. A commitment to interoperability would have substantially backed the efforts of the BMDO. The BMDO is committed to this objective through the development of the battle management, command, control, communication (BMC³) network. As stated, "[t]he aim of the BMC³ effort is to avoid creating stovepipe systems and instead use existing command and control links as much as possible."³¹

Interoperability is essential to ensuring situational awareness of the potential threats and the employment of TMD systems to counter these threats. Benefits from interoperability at the operational level will allow for a more rapid and accurate dissemination of intelligence information to the specific units while ensuring the most effective use of the TMD platforms. Interoperability will ensure that the multi-layer approach is optimized by providing early warning information to all components of the defense network. This design attribute will allow for the various components of the TMD network to work in tandem, maximizing the probability of a successful kill.

Conclusions

We can assume that our enemies and future adversaries have learned from the Gulf War. They are unlikely to confront us conventionally with mass armor formations, air superiority forces, and deep-water naval fleets of their own, all areas of overwhelming U.S. strengths today. Instead, they may find new ways to attack our interests, our forces, and our citizens. They will look for ways to match their strengths against our weaknesses. They will actively seek existing and new arenas in which to exploit our perceived vulnerabilities.³²

There is no doubt that the authors of the QDR are committed to deterring and protecting U.S. forces against the potential use of a WMD. It clearly establishes the need for TMD systems and the continued refinement of methods to locate and neutralize theater missiles prior to launch. However, while attempting to balance cuts in defense and simultaneously meeting the current and future military threats, it has not gone far enough in the area of TMD in support of the Operational Commander. The Gulf War established our potential vulnerability to ballistic missiles and the political and military consequences of their use. The future threats to the U.S. and allied forces are predominately comprised of third world countries in limited regional conflicts. Despite our best efforts at counterproliferation, these countries will continue to obtain NBC capabilities and the delivery system technologies. The most effective way to ensure adequate protection and security for forward deployed U.S. and allied forces is to implement an integrated TMD system.

To achieve this end, we must continue to develop and improve on a viable and effective TMD network. By adopting a sequential approach to development, the possibility of lowering overall funding demands through completely complementary and compatible systems could result. That said, simply identifying programs and providing funding will not effectively counter the threat to U.S. Forces. A total commitment to defeat the threat in all aspects, including direct missile intercepts, will be required to ensure the protection of deployed forces in pursuit of our political objectives.

The Operational Commander in carrying out the National Command Authority directives is responsible for the protection of the troops operating in the specific area of responsibility. Simply maintaining the status quo will not ensure adequate protective systems

to counter the current and future threats of a theater missile tipped with a WMD. It is essential that Operational Commanders have an effective TMD system to deter or destroy these threats. While NMD is essential, the benefit of developing TMD first will meet the existing threat and potentially lower the risk of follow on systems. It is up to the United States to demonstrate a commitment to research, development, and implementation of an effective system to deter any possible advantage a WMD can offer a 'rogue' state.

NOTES

- ¹ Robert M. Stein and Theodore A. Postal, "Patriot Experience in the Gulf War," International Security, Summer 1992, 204.
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